

Water Quality Meters

In-Situ TROLL 9500

The powerful, portable TROLL 9500 Water Quality Instrument is designed for groundwater and surface water monitoring. The unit houses up to nine water quality sensors, internal power, and optional data logger.

FEATURES

Lower Total Cost of Ownership

- Save time and money with long-lasting internal power, automated low-flow sampling, remote access with telemetry, and more.
- Reduce maintenance and site visits – Field-proven sensors and antifouling system withstand harsh conditions.
- Deploy corrosion-resistant sonde in fresh, waste, and marine waters.

Reliable, Accurate Operation

- Maintain and calibrate field-replaceable sensors quickly.
- Simplify data collection and management with Win-Situ® 4 Software.
- Get proven performance – Rigorous third-party testing shows that the TROLL 9500 delivers consistent results. Sensors are factory calibrated with NIST®-traceable standards (where applicable).

MODELS

Logging

- **LTS** – LTS stands for “Level, Temperature, and one additional Sensor,” such as conductivity, dissolved oxygen (DO), or pH.
- **Professional** – Offers the highest value for most applications. Allows for several sensors – conductivity/salinity, DO, ORP, pH, temperature, or depth.
- **Professional XP** – The most capable TROLL 9500 offers features available on the Professional and supports XP or “Extended Parameter” sensors – turbidity, ammonium, chloride, or nitrate.

Non-Logging

- **Profiler** – Ideal for water quality sampling or profiling. Similar to the Professional, but does not include memory or logging capabilities. Data can be logged to a RuggedReader® Handheld PC or laptop.
- **Profiler XP** – Offers the same features as the Profiler with the option to use XP sensors.



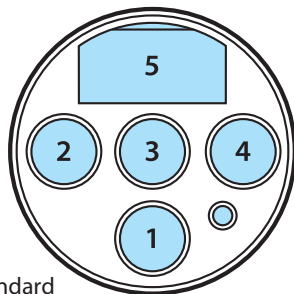
RuggedReader



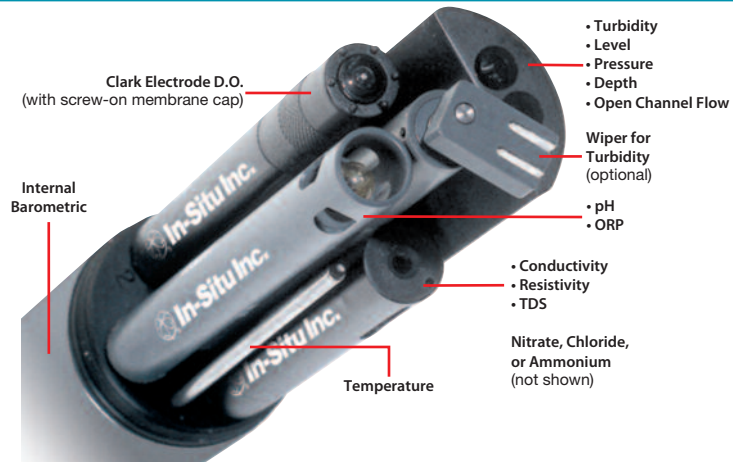
SENSOR OPTIONS

Smart Sensor Ports allow you to create custom sensor configurations by adding the sensors of your choice to the ports you want.

1. pH/ORP or ISE*
2. D.O or ISE
3. ISE or optional wiper for Turbidity
4. Conductivity only
5. Fixed port – Depth/Pressure and/or Turbidity Temperature and Barometric Pressure are standard



*ISE = pH, ORP, pH/ORP, Nitrate, Chloride, Ammonium



CALL GEOTECH TODAY (800) 833-7958

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In-Situ TROLL 9500

SPECIFICATIONS

General

Operating Temp.	23 to 122°F (-5 to 50°C)
Storage Temp.	-40 to 140°F (-40 to 65°C)
Dimensions	1.85 in. OD x 21.75 in. (4.7 cm OD x 55.25 cm). With twist-lock hanger: 22.25 in. (56.52 cm). Restrictor: 3.5 in. OD x 8.25 in. long (8.9 cm OD x 21 cm long)
Weight	4.2 lbs. (1.9 kg)
Wetted Materials	PVC, 316L stainless steel, titanium, Acetal, Viton®, nylon. Cable: Tefzel® or polyurethane
Water Tightness Rating	IP68 with all sensors and cable attached. Battery compartment: IP67 without the battery cover or cable attached
Output Options	RS485/RS232; SDI-12 (optional with SDI-12 adapter); ASCII streaming mode or binary command
Power	External: 9-16 VDC (optional). Internal: 2 user-replaceable D batteries (use either alkaline or matched pair of lithium)

Logging

Data Logging	16 programmable tests (defined, scheduled to run, or stored). Logging modes: Linear, Linear Average, Event
Memory	4 MB (222,000 data records ¹)

Standard Sensors	Accuracy	Range	Depth Rating	Response Time (T90)	Methodology	Compatibility
Barometric Pressure	±0.3% FS	16.5 psia	Meets highest rating	<30 sec per 100 ft. (30 m) of cable	Silicon strain gauge	All TROLL 9500
Level, Depth, Pressure	±0.1% FS or better Sensor accuracy: -5 to 50°C	15, 30, 100, or 300 psi	<i>Non-vented</i> 30 psia: 35.76 ft. (10.90 m) 100 psia: 197.2 ft. (60.11 m) 300 psia: 658.6 ft. (200.7 m) <i>Vented</i> 15 psig: 34.61 ft. (10.55 m) 30 psig: 69.21 ft. (21.10 m) 100 psig: 230.7 ft. (70.32 m) 300 psig: 692.1 ft. (211.0 m)	Instantaneous in thermal equilibrium	Silicon strain gauge (non-vented or vented)	All TROLL 9500
Conductivity	Low: ±0.5% or 2 µS/cm High: ±0.5% + 2 µS/cm	Low: 5 to 20,000 µS/cm High ² : 150 to 112,000 µS/cm	Low: Meets highest rating High: Meets highest rating	Low: Instantaneous High: Instantaneous	Std. Methods 2510, EPA 120.1 Std. Methods 2510, EPA 120.1	All TROLL 9500
Dissolved Oxygen						
<i>RDO³ Sensor³</i>	±0.1 mg/L ±0.2 mg/L ±10% of reading	0 to 8 mg/L 8 to 20 mg/L 20 to 50 mg/L	Meets highest rating	T90: <45 sec. T95: <60 sec. T90: <45 sec. T95: <60 sec. T90: <45 sec. T95: <60 sec.	<i>EPA-approved In-Situ Methods⁴</i> 1002-8-2009, 1003-8-2009, 1004-8-2009	All TROLL 9500
<i>Clark Cell Electrode</i>	±0.2 mg/L	0 to 20 mg/L 0 to 200% saturation	807 ft. (246 m)	1-mil membrane: 1-2 min. @ 25°C 2-mil membrane: 90 sec. to 3 min.	Std. Methods 4500-O G, EPA 360.1	All TROLL 9500
pH (single) or pH/ORP (combo)	pH: ±0.1 pH unit ORP: ±5.0 mV	pH: 0 to 12 pH units ORP: ±1400 mV	pH: 807 ft. (246 m) pH/ORP: 807 ft. (246 m)	pH: <15 sec., pH 7 to pH 4 ORP: <15 sec.	pH: Std. Methods 4500-H ⁺ , EPA 150.2 ORP: Std. Methods 2580	All TROLL 9500 1 ⁵ , 2 ⁵ , 3 ⁵ , 4 ⁵
Temperature	±0.1°C	23 to 122°F (-5 to 50°C)	Meets highest rating	<30 sec.	EPA 170.1	All TROLL 9500

Extended Parameter (XP) Sensors

Ammonium (NH₄⁺)	±10%	0.14 to 14,000 ppm N	46 ft. (14 m)	T98: <60 sec., 1.4 to 14 ppm N	Std. Methods 4500-NH ₃ D, EPA 350.3	2 ⁵ , 4 ⁵
Chloride (Cl⁻)	±15%	0.35 to 35,500 ppm Cl	231 ft. (70 m)	T98: <60 sec., 3.54 to 35.45 ppm Cl	Std. Methods 4500-Cl ⁻ D	2 ⁵ , 4 ⁵
Nitrate (NO₃⁻)	±10%	0.14 to 14,000 ppm N	46 ft. (14 m)	T98: <60 sec., 1.4 to 14 ppm N	Std. Methods 4500-NO ₃ D	2 ⁵ , 4 ⁵
Turbidity	±5% or 2 NTU/FNU	0 to 2,000 NTU/FNU	346 ft. (105 m)	Instantaneous (5 sec. for first reading)	ISO 7027	2 ⁵ , 4 ⁵

Warranty TROLL 9500 and all sensors (excluding RDO & ISE sensors) come with a 1-year warranty. RDO Sensor: 3-year warranty. ISE sensors: 90-day warranty. RuggedCable® System: 2-year warranty.

Notes

¹ A single data record includes time stamp, temperature, RDO, pH, and conductivity logged in Linear or Linear Average mode.

² Full operating range: 70 to 200,000 µS/cm.

³ Full operating range: 0 to 50 mg/L.

⁴ EPA-approved under the Alternate Test Procedure process.

⁵ 1=Profiler, 2=Profiler XP, 3=Professional, 4=Professional XP, 5=LTS

Specifications are subject to change without notice. Tefzel is a registered trademark of E.I. du Pont de Nemours & Co. Viton is a registered trademark of DuPont Performance Elastomers L.L.C.

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